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- at least one electrical coil, movably supported by the swing arm, which coil is arranged to be traversed by magnetic fields of the permanent magnets;
 - a cage, enclosing the coil and the permanent magnets, which cage acts as a closed magnetic return path;
- characterized in that the cage (4) comprises, at its side that is remote from the pivot (5), a shielding wall having an opening (4a) in the area of the magnets (1, 1a).

REMARKS

Claims 6-9 have been made independent.

Claim 7 has been amended to change the phrase "the pivot is replaced with" to "in lieu of a pivot." This is to eliminate any possible implication that a replacement operation is part of the claim.

Claim 8 has been amended to eliminate the word "originally" for reasons analogous to those discussed in the previous paragraph with respect to claim 7.

In some instances, the word "comprising" is added to the claims to give greater breadth.

Applicant respectfully submits that the amendments to claims 3 and 6-9 have not narrowed the claims.

New claim 11 is similar to old claim 10 as it dependent from old claim 1.

The specification previously incorporated material from the claims by reference to the claim numerals. Applicant feared that this type of reference might become confusing as claims were amended during prosecution. Accordingly the material from the original claims has been added to the specification herein, and the references to the claim numerals have been removed. No new matter has been added.

Rejections under 35 USC §112 par. 2

These rejections are respectfully traversed. Applicant respectfully submits that it is inappropriate to characterize these pedantic stylistic requirements as actual statutory indefinitenesses, when they are merely relating to traditional patent claim drafting style. Nevertheless, in an effort to advance prosecution, Applicant has amended the claims in question to remove the informalities pointed to by the Examiner.

Art rejections

Claim 1 has been amended so that it distinguishes patentably over the reference. Reconsideration in light of the amendment is respectfully requested.

The rejection of claim 6 is traversed. The Examiner has failed to indicate where the reference shows first and second pivots. As far as Applicant can tell, there is only one pivot in Hartman. The smaller part of the arm at 44 seems to be rigidly attached to the larger part of the arm at 38 via what appears to be a screw. This attachment is not given a reference numeral, so it is rather difficult to tell precisely what it is, but it looks like a screw to the undersigned.

The rejection of claim 9 is traversed. The Examiner says that Hartman's cage 25 has a shielding the wall on the side remote from the pivot. In support of this allegation, the Examiner points to Hartman's figure 3. Applicant disagrees with this characterization of Hartman's figure 3. As far as Applicant can tell, the side of the cage remote from the pivot is shown by reference numeral 24. Also, as far as Applicant can tell, this side of the cage is as completely open, and does not include a shielding wall. Where is the shielding wall?

The rejections over the Hartman/Anna references are respectfully traversed. The two references are NOT from the same field of endeavor. One relates to a motor for a disk drive. The other relates to a motor from a shaver. Neither would one of ordinary skill in the art of disk drives look at the shaver art for motor design issues nor vice versa.

Moreover, in at least some instances, Applicant respectfully submits that the Examiner mischaracterizes Anna. For instance, the Examiner says that spring 12 is a torsion (claim 4) or blade (claim 5) spring, when the reference specifically states that 12 is a leaf spring (column 3, line 12). The Examiner also says that Anna's springs 11 are blade springs, when the reference says they are leaf springs (column 3, line 21). The Examiner also says that the spring (11) in Anna replaces pivot (4), but Applicant does not see how this spring can be viewed as a replacement for the pivot. The purpose of the spring appears rather to be for providing additional flexibility.

Claim 8

The Hartmann/Anna/Oveyssi rejection is also respectfully traversed. Again, Oveyssi and Hartman are in the field of disk drives, while Anne is in the field of shavers. It would not be obvious to combine them.

Moreover, the Examiner appears to be misreading both the claim and Oveyssi. The claim requires tapering on the sides of the cage which would otherwise be parallel to the plane of oscillation. The Examiner is referred to Applicant's Fig. 7 for a better understanding of this. By contrast, the tapering shown in Fig. 6A of Oveyssi appears to be in a plane which would otherwise be *perpendicular* to the plane of oscillation.

Moreover, Applicant's claim 8 also recites that the tapering is toward the side that is remote from the pivot. Again, for a better understanding, the Examiner is referred to Applicant's Fig. 7. As far as Applicant can tell, the tapering in Fig 6 of Oveyssi is *toward* the pivot (12), *not away* from it.

Accordingly, Oveyssi fails to teach or suggest the additional limitations of claim 8.

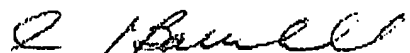
Any other rejections would appear to be moot in view of the above.

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Applicant respectfully submits that he has answered each issue raised by the Examiner and that the application is accordingly in condition for allowance. Allowance is therefore respectfully requested.

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Respectfully submitted,

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MARKED UP VERSION OF CLAIMS

1. (amended) An electrical apparatus [having] comprising an actuator including at least two permanent magnets (1, 1a) and at least one electrical coil (2) which is movably supported by means of a swing arm (3), which coil is arranged to be traversed by magnetic fields of the permanent magnets (1, 1a), the actuator having a cage (4), which encloses the coil (2) and the permanent magnets (1, 1a), as a closed magnetic return path, further comprising means for exerting a permanent return force for the excursions of the swing arm.

3. (amended) An electrical apparatus as claimed in claim 1, characterized in that the swing arm (3), which is secured to the coil (2) is supported on a pivot (5), and the pivot (5) is arranged at [the] an inner side of the [sector-shaped] permanent magnets (1, 1a), which are sector-shaped.

6. (amended) An electrical apparatus [as claimed in claim 1] comprising

- a swing arm;
- at least two permanent magnets;
- at least one electrical coil, movably supported by the swing arm, which coil is arranged to be traversed by magnetic fields of the permanent magnets; and
- a cage, enclosing the coil and the permanent magnets, which cage acts as a closed magnetic return path,

characterized in that

- the permanent magnets are sector shaped;

- the apparatus comprises at least first and second swing arms;
- at least a second pivot (11) is arranged at the outer side of the sector-shaped permanent magnets (1, 1a), and
- at least one pivotal joint (9) is present, which pivotal joint couples [a] the first swing arm (3) supported on [the] a first pivot (5) and [a] the second swing arm (10) supported on the second pivot (11) in a pivotable manner and so as to be slidable with respect to one another, the pivots (5, 11) being secured to a housing (8).

7. (amended) An electrical apparatus [as claimed in claim 1, characterized in that the pivot (5) is replaced with] comprising

- a swing arm;
- at least two permanent magnets;
- at least one electrical coil, movably supported by the swing arm, which coil is arranged to be traversed by magnetic fields of the permanent magnets;
- a cage, enclosing the coil and the permanent magnets, which cage acts as a closed magnetic return path; and
- a point of attachment to a housing (8), where the swing arm (3) is attached by means of a blade spring (12), so that the blade spring acts in lieu of a pivot.

8. (amended) An electrical apparatus [as claimed in claim 1,] comprising

- a swing arm;
- at least two permanent magnets;

- : at least one electrical coil, movably supported by the swing arm, which coil is arranged to be traversed by magnetic fields of the permanent magnets;
- : a cage, enclosing the coil and the permanent magnets, which cage acts as a closed magnetic return path;

characterized in that

the bounding surfaces of the cage (4), which [originally] would otherwise extend parallel to the plane of oscillation of the coil (2), taper towards the side that is remote from the pivot (5), and the bounding surfaces of the coil (2) and the magnets (1, 1a) are adapted accordingly.

9. (amended) An electrical apparatus [as claimed in claim 1,] comprising

- = a swing arm;
- : at least two permanent magnets;
- : at least one electrical coil, movably supported by the swing arm, which coil is arranged to be traversed by magnetic fields of the permanent magnets;
- : a cage, enclosing the coil and the permanent magnets, which cage acts as a closed magnetic return path;

characterized in that the cage (4) comprises, at its side that is remote from the pivot (5), [the cage (4) has] a shielding wall having an opening (4a) in the area of the magnets (1, 1a).

MARKED UP VERSION OF THE SPECIFICATION

Page 1, line 21 - page 3, line 29

[The] In one embodiment, [as defined in claim 2] the cage is made of soft-iron or steel and is shaped so as to shield the magnetic stray fields of the magnets. This embodiment ensures that, as a result of the return path which is formed by a ferromagnetic metal, such as soft-iron and which encloses the coil and the magnets, only a small portion of the magnetic stray field can emerge from the gap between the cage, the coil and the magnets.

[The] In another embodiment, [as defined in claim 3] the swing arm — which is secured to the coil — is supported on a pivot, and the pivot is arranged at an inner side of the permanent magnet, which is sector-shaped. This embodiment enables a simple and direct transmission of the reciprocatory oscillating movement to a device or load to be driven. It does not require a transmission gear as in the case of an electric motor. Thus, a vibrating shaving head can be driven directly. This provides an efficient and low-maintenance drive. Moreover, it enables the oscillation properties of the actuator to be varied easily. The coil is secured to one end of the swing arm, the load to be driven being secured to the other end. The torque of the actuator and the oscillation frequency of the actuator can be influenced in accordance with the ratio between the distances of the coil and the load to be driven from the pivot.

In still another embodiment, [Claims 4 and 5] the swing arm, which is supported on a pivot, is preloaded with respect to a housing by means of a torsion spring. In a further embodiment, the swing arm is preloaded with respect to a housing by means of at least one blade spring. These embodiments define a possibility of how to cause the swing arm to return automatically to the center position upon excursions to either side. For this purpose, a torsion spring may be arranged around the pivot, which spring has one end connected to the swing arm

and its other end to the housing of the actuator. This provides a permanent return force for the excursions of the swing arm. Alternatively, the swing arm may be preloaded by means of two lateral blade springs, which are preferably secured to the load. Thus, it is possible to attain a higher preload than with the torsion spring but the construction is slightly more complicated.

[The] In yet another embodiment, [as defined in claim 6] at least a second pivot is arranged at the outer side of the sector-shaped permanent magnets. At least one pivotal joint is present, which pivotal joint couples a first swing arm supported on the first pivot and a second swing arm supported on the second pivot in a pivotable manner and so as to be slidable with respect to one another. The pivots are secured to a housing. This embodiment enables larger amplitudes of the swing arm to be obtained, without more room being required by the arrangement. For this purpose, the sector-shaped magnetic circuit is arranged so as to be 180° rotated with respect to the load or device to be driven, as a result of which the load is now disposed at the outside of the sector. In addition, the swing arm is divided into two parts, each of the two parts being mounted on a pivot. The two swing arm parts being linked via a pivot, which in addition is arranged so as to be movable in a longitudinal direction in at least one of the swing arm parts.

In yet a further [The] embodiment [as defined in claim 7] the pivot is replaced with a point of attachment to a housing, where the swing arm is attached by means of a blade spring. This embodiment provides an alternative to mounting of the swing arm with the coil by means of pivots. In the present case the swing arm consists at least partly of a blade spring, which can be deflected by the coil secured to one of its ends. Such an arrangement does not have any rotatable parts and can be manufactured particularly cost-effectively.

In yet a still further embodiment, the bounding surfaces of the cage, which originally extend parallel to the plane of oscillation of the coil, taper towards the side that is remote from the pivot and the bounding surfaces of the coil and the magnets are adapted accordingly. Advantageously, at its side that is remote from the pivot, the cage may have a shielding wall having an opening in the area of the magnets. These [The] embodiments [as defined in claims 8 and 9] provide a further reduction of the basically low electromagnetic emission by the coil, through which an alternating current flows, and the magnetic stray field of the permanent magnets. Thus, it is also possible to adhere to more stringent future limits without any problems.

[The] In yet still another further embodiment [as defined in claim 10 makes] the said [advantageous] embodiments listed above are made suitable for use in an electric shaver, which enables said shaver to be of a particularly cheap and robust construction.

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